

Response to Office Action dated January 17, 2007
U.S. Application No. 10/679,541
Our Ref. 80-20701116 (formerly) 6175-059

Amendment to the Drawings

Pursuant to 37 C.F.R. §1.84 (p)(5) and 37 C.F.R. 1.121(d), Applicants herewith amend the Drawings to include a Figure Number for the previously amended drawing Fig. 21.

Applicants respectfully traverse the Examiner's suggestion that all recited characters are not recited in the specification. As indicated in the response filed on November 7, 2006, support for new drawing Fig. 21 can be found, for example, on page 11, line 11 – page 12, line 2 of the specification and in Fig. 6.

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Remarks

This application has been reviewed in light of the Office Action dated January 17, 2007. Claims 7 –11, 29 – 46 are pending in this application. Claims 7 -11, 29 - 34, 37- 41 and 43 - 45 have been amended to define still more clearly what Applicants regard as their invention. Claims 7, 29, 39 and 43 are in independent form. Favorable reconsideration is respectfully requested.

Pursuant to 37 C.F.R. §1.84 (p)(5) and 37 C.F.R. 1.121(d), Applicants herewith amend the Drawings to include a Figure Number for the previously amended drawing Fig. 21. Applicants respectfully traverse the Examiner's suggestion that all recited characters are not recited in the specification. As indicated in the response filed on November 7, 2006, support for new drawing Fig. 21 can be found, for example, on page 11, line 11 – page 12, line 2 of the specification and in Fig. 6. Therefore, Applicants respectfully request the objection to be withdrawn.

Examiner has objected to Claim 46 alleging that it should depend on Claim 43. However, Applicants would like to respectfully point out that Claim 46 is already dependent on Claim 43. Applicants respectfully request the Examiner to withdraw the objection and Claim 46 be allowed.

Claims 7, 11, 29, 31 –33 and 43 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakai, U.S. Patent Application Publication No. 20060106757 (Sakai) in view of Duncan et al., U.S. Patent No. 5,917,483 (Duncan). Applicants respectfully traverse these rejections.

A need exists in the prior art to permit the user to, rather than relying on his or her imagination alone, understand multiple views of a unified object that are separated in a two-dimensional design drawing, such as a section cut, that may not match any view that would actually be seen by a viewer of a real object. *See* 0005 of the Publication. Using conventional methods, in order to understand multiple views separated in a two-dimensional design drawing and which may be located far apart on a conventional large paper drawing the paper drawing may be folded in a cumbersome fashion so that the items of interest are in close proximity to each other, with other items hidden by the fold in the drawing. *See* 0038 of the Publication. Moreover, CAD systems did not provide for such an analogous process. Applicants' invention resolves this long-felt need by disclosing a virtual folding process that permits the user to, for example, select a front view 44 and a section view 49 and to move the two views close to each other. *See* Fig. 6 and ¶0039 of the Publication.

As described in the previous response, Applicants' invention generally discloses, for example, a virtual folding process that permits the user to view selected views juxtaposed near each other on a screen. *See, e.g.,* 0008 of the Specification. The invention displays, for example, two views of an object by selecting a first one of the views, selecting a second one of the views, and moving at least one of the views so that the first view is in proximity to the second view. *See* Fig. 21. Moreover, the first view and the second view, in proximity to each other, can be visualized in the same GUI window (see, e.g., Fig. 6).

The Examiner cites Sakai as teaching selecting a plurality of viewing functions to allow a user to change or alter the view in the window. *See* Office Action, page 5. However, Sakai

merely teaches an electronically stored job sheet that can be accessed from any location in a factory. *See* Abstract. Moreover, Sakai teaches various viewing modes to better view two-dimensional and three-dimensional views of a sheet metal part. *See* ¶¶0023 and 0024. Additionally, Sakai teaches in Figs. 17 –22 different views of a same bend model data on a display screen.

The Examiner asserts that Sakai “clearly teaches that the user selects first window that contains various views” and cites to Fig. 22, paragraphs 0306, 0311 – 0313 as support for this assertion. However, a close reading of these paragraphs shows that Sakai does not at all mention a user selecting a window. Rather, Sakai, as cited above, merely describes, without more, displaying views. Additionally, Fig. 22 does show a layout, but the engineering views are not selectable. However, Sakai does not teach or suggest forming a new drawing layout, for example, a second drawing layout, which is comprised of at least the first and second views selected from a first layout, and formed by applying a transformation matrix to the first and second views from the first drawing layout and relating the views to each other by repositioning the views in the second drawing layout (emphasis added). By repositioning, the first view and the second view in the second drawing layout are shown in positions with respect to each other that are different than their positions with respect to each other in the first drawing layout.

The Examiner acknowledges that Sakai fails to teach certain features of the GUI window system but alleges that “Duncan teaches an advanced window management system whereby multiple windows, panes, or views . . . can be combined into a single target window.” *See* Office

Action, page 9. Moreover, the Examiner alleges, without support, that “a pane [is] equivalent to a layout in the terminology of the instant application.” *Id.*

As a general matter, Applicants respectfully request the Examiner to provide evidence in the specification where this alleged equivalence is described. Further, Duncan is alleged to teach, for example, “selecting for inclusion in a second drawing layout at least a first and second view from the plurality of views.” Duncan instead teaches selecting multiple window frames to place into one window frame. *See* Fig. 2b of Duncan. Thus, Duncan merely teaches customizing views of various windows into a single target window, where a view includes display information that corresponds to an underlying program and may comprise information for editors or tools used in software development, and such windows describe frame windows. *See* Duncan Abstract. In contrast Applicants’ invention describes views in the context of engineering drawing layouts.

Moreover, the Examiner characterizes various frame windows as described in Duncan as teaching a drawing layout as described by Applicants’ invention. However, Duncan is clearly distinguishable from Applicants’ invention in that the views, as described by Applicants’ invention, relate to views of a three-dimensional object used in engineering drawings. Using conventional methods, engineering drawings may contain different two-dimensional views of a part or assembly, whereby the views cannot be separated from one another nor re-arranged within the drawing, resulting in engineers relying on their imagination to relate the views to each other. The present invention discloses a drawing layout that may include front, back, top, bottom, left, right, section, or detail views of a part or assembly. In contrast, Duncan describes views as being

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in general textual, graphical, and control information that correspond to an underlying computer program such as the display for a program and not views as described by Applicants' invention. See col. 2, lines 61-63. Duncan does not disclose engineering drawings or two-dimensional design drawings that contain views of a part, for example. Therefore, the various frame windows described in Duncan do not teach or suggest a *drawing layout* nor a first and a second view of an engineering drawing. Further, Duncan does not teach or suggest choosing a view, applying a transformation matrix and repositioning the views. By repositioning the views, the views of the drawings attain different positions than their original views. Thus, Examiner's conclusion, that "a pane is equivalent to a layout in the terminology of the instant application" is unfounded. Duncan alone, or in combination with Sakai, does not teach or suggest Applicants' invention as claimed. Thus, Applicants' invention describes an unexpected result of being able to change positioning of two-dimensional views in a drawing layout. Therefore, Applicants respectfully request that the rejection be withdrawn.

Claim 29 recites a computer-implemented method of rendering different views of a three-dimensional model, the method comprising rendering the plurality of views of the three-dimensional model in a graphical user interface window in an arrangement representing a computer-aided design first drawing layout; selecting for inclusion in a computer-aided design second drawing layout at least a first and a second view from the plurality of views in the first drawing layout in the graphical user interface window; and creating a new drawing layout by using a transformation matrix to reposition the first view and the second view to form a second drawing layout in which the first and second views from the first drawing layout occupy new

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positions relative to each other so as to maintain simultaneous visibility of the first and second views within a currently displayed area of the graphical user interface window.

The Examiner argues that Sakai and Duncan teaches “simultaneous display.” *See* page 10 of Office Action. However, Sakai does not teach or suggest, alone or in combination, for example, simultaneous visibility of the first and second views, newly repositioned in the new drawing layout (the second drawing layout) within a currently displayed area of the graphical user interface window. In contrast, Sakai instead merely discloses multiple windows moved and resized. Moreover, in Applicants’ invention, the views from the first layout can be seen in the second layout in one GUI window. Therefore, Sakai, alone or in combination, does not teach or suggest Applicants’ invention as recited in claim 29. Therefore, Applicants respectfully request the rejections withdrawn and the claims allowed.

Claims 39 and 43 are apparatus claims corresponding to method Claim 29 and also are believed clearly patentable over the art cited for substantially the same reasons as those presented above with respect to Claim 29.

Claims 8-9, 34-36, 41-42, and 45-46 are rejected under 35 U.S.C. §103(a) as being unpatentable over Sakai in view of Duncan as applied to claims 7, 29, 39, and 43 above, and further in view of Hanratty, U.S. Patent No. 5,990,897 (Hanratty).

Sakai is alleged to teach that “the system can be used to enter and /or develop original 2-D and 3-D drawings based on a customer’s specification and further that original customer drawings may form part of an order, wherein a 2-D single flat view of the part to made and/or a 2-D three view (e.g., including top, front, and side view) of the part, wherein these drawings are processed as

part of the design flow, wherein they can be downloaded or provided in some manner.” *See* Office Action, page 11. However, as discussed above, Sakai merely teaches various viewing modes to better view two-dimensional and three-dimensional views of a sheet metal part. *See* ¶¶ 0023 and 0024. Additionally, Sakai teaches in Figs. 17 –22 different views of a same bend model data on a display screen. Moreover, Sakai does not teach the user selecting a window. Additionally, Fig. 22 does show a layout, but the engineering drawing views are not selectable. However, Sakai does not teach or suggest forming a new drawing layout, for example, a second drawing layout, which is comprised of at least the first and second views selected from a first layout, and formed by applying a transformation matrix to the first and second views from the first drawing layout and relating the views to each other by repositioning the views in the second drawing layout (emphasis added). By repositioning, the first view and the second view in the second drawing layout are shown in positions with respect to each other that are different than their positions with respect to each other in the first drawing layout. The Examiner acknowledges that Sakai is silent with respect to the conventional drafting standard but argues that Hanratty teaches the “use of drafting standards in aligning views..., particularly emphasizing...where the positioning of views is said to be specified by the standard, and to be done automatically.” *See* Office Action, at 12. Moreover, the Examiner alleges that [“t]his clearly proves that the views in Fig. 3 are automatically aligned and positioned as set forth above.” Applicants respectfully disagree.

The Examiner misunderstands Fig. 3 of Applicants’ invention. Figs. 3, 4, and 6 disclose a computer-based system which includes a virtual folding process for permitting a viewer to

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place selected views from a plurality of possible views in proximity to each other. *See* 0037 of the Publication. Figs. 3 and 4 are analogous to the two-dimensional paper drawing situation, described above. Fig. 3 does not indicate an automatic alignment as described in Hanratty but merely illustrates the starting point for the folding described by Applicants' invention.

Moreover, as discussed in the previous response, Hanratty teaches "techniques [which] are developed for defining an engine which has as its input two-dimensional drawing views, wherein the engine produces a three-dimensional geometric solid." *See* Abstract. Hanratty is concerned with identifying views in a single layout in order to generate a three-dimensional solid model from the two-dimensional views in the single layout (emphasis added). Thus, Hanratty merely teaches a set of rules that allow the identification of elements within the 2D views to ascertain the 3D form defined by these elements and their corresponding relations to other elements (emphasis added). Thus, Sakai alone or in combination with Hanratty does not teach or suggest Applicants' invention. Therefore, Applicants respectfully request that the rejection be withdrawn and the claims allowed.

A review of the art of record has failed to reveal anything that, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as applied against the independent claims herein. Therefore, those claims are respectfully submitted to be patentable over the art of record. It is respectfully requested that the Examiner withdraw the claim rejections and allow the claims.

The other rejected claims in this application depend from one or another of independent Claims 7, 29, 39 and 43, as amended, discussed above and, therefore, are submitted to be

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patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual consideration or reconsideration, as the case may be, of the patentability of each claim on its own merits is respectfully requested.

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Response to Interview Summary

Examiner's statement regarding the Substance of Interview in the Interview Summary states, "[c]ontinuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Applicants' representative briefly requested a clarification of what possible application in the KSR decision might have on prosecution of the instant application. Applicants' representative presented arguments concerning how the instant invention differered [sic] from the applied reference. Examiner made some possible suggestions with regards to possible amendments to help clarify the meaning of certain terms. No agreement was reached with respect to any possible withdrawal of grounds of rejection."

Applicants note that herein contain claim amendments that provide greater clarification of the meaning of the terms in question. Applicants also note that, upon Applicants' representative's request for clarification in light of the *KSR* decision, Examiner explained that he did not have suggestions at that time.

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Conclusions

Claims 7 -11, 29 - 34, 37- 41 and 43 - 45 have been amended to define still more clearly what Applicants regard as their invention. Claims 7-11 and 29-46 are pending and believed to be in condition for allowance. Applicant respectfully requests that all pending claims be allowed.

Please apply any credits or excess charges to our deposit account number 50-0521.

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Respectfully submitted,

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